

# Future Combat Systems

## DARPA Tech 2000



Marion H. Van Fosson, LTC, USA  
PM Future Combat Systems  
(703) 696-7499  
[mvanfosson@darpa.mil](mailto:mvanfosson@darpa.mil)



# What is the FCS Program?



- **The Future Combat Systems (FCS) Program is a collaborative program between the Defense Advanced Research Projects Agency (DARPA) and the US Army to provide for the evaluation and competitive demonstration of the Future Combat Systems.**
- **The FCS Program will:**
  - Define and validate FCS design/operational concepts using modeling and simulation and surrogate exercises
  - Develop key enabling technologies for distributed lighter forces
  - Fabricate and test a multi-mission FCS Demonstrator suitable for EMD and production



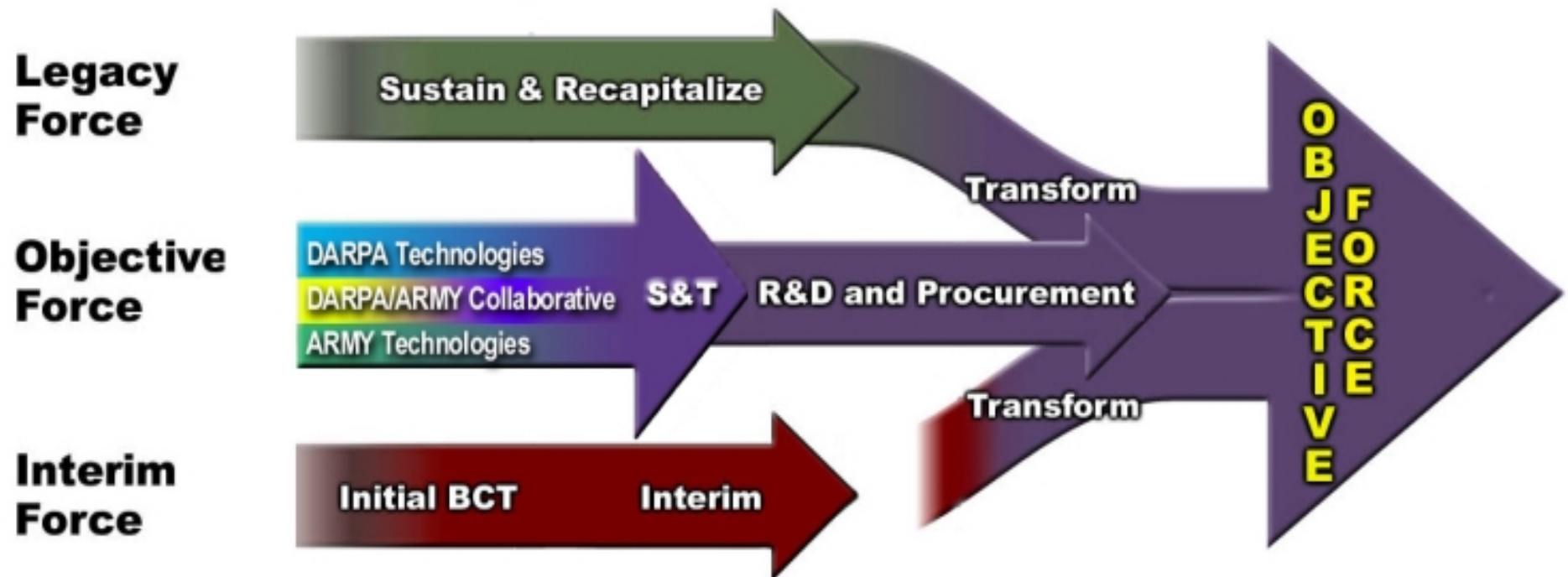
# FCS Program Structure



- **Structured to support the vision of the Objective Force.**
- **Contains the key elements representing the user, the technologist, and the developer.**
- **Built around a core team to execute the program.**
- **Supported by directly related DARPA risk reduction initiatives, Army S&T and a TRADOC TSM.**
- **Structured to share information and encourage Team innovation.**



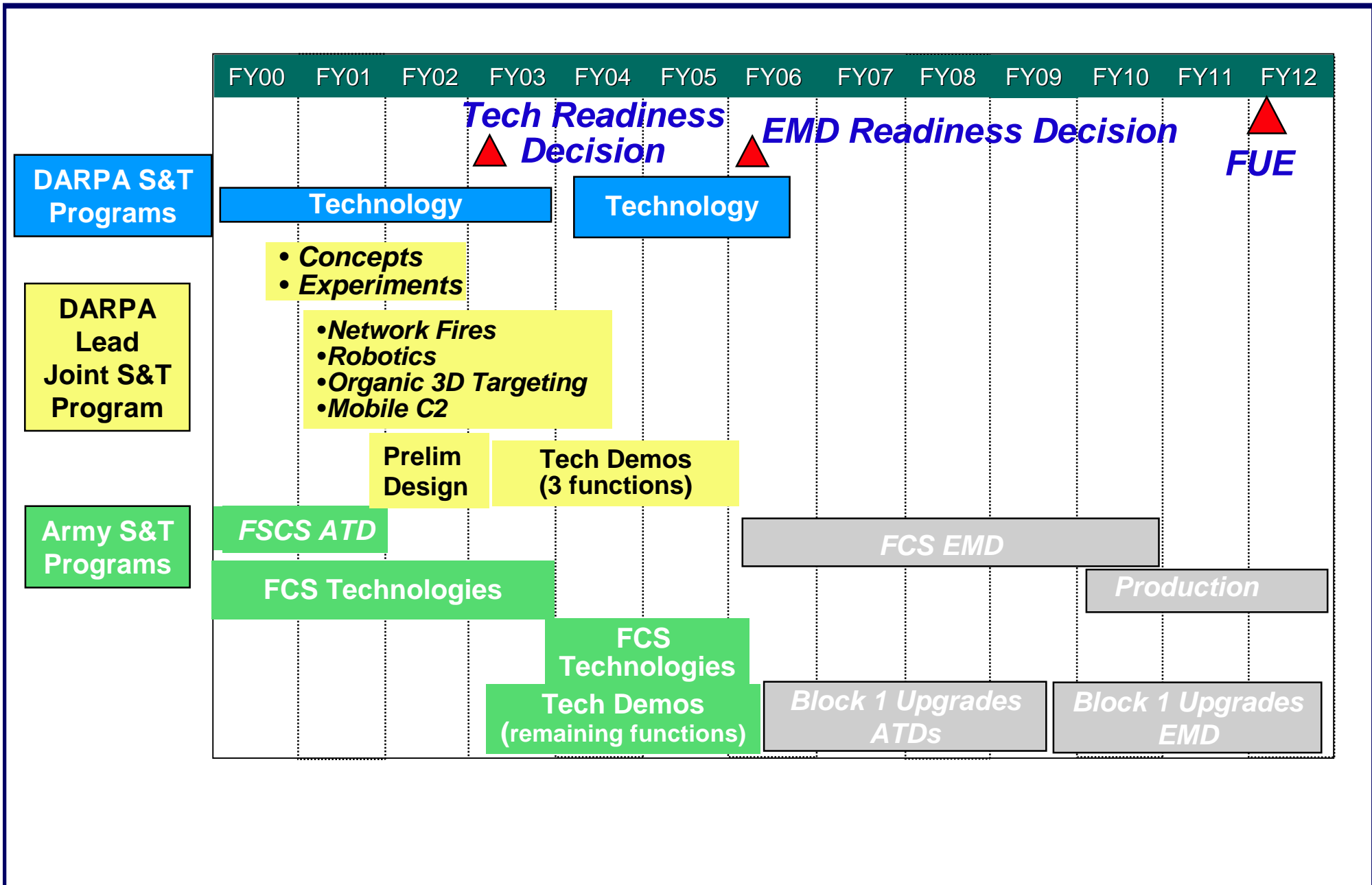
# The Army Transformation



*... Responsive, Deployable, Agile,  
Versatile, Lethal, Survivable, Sustainable.*

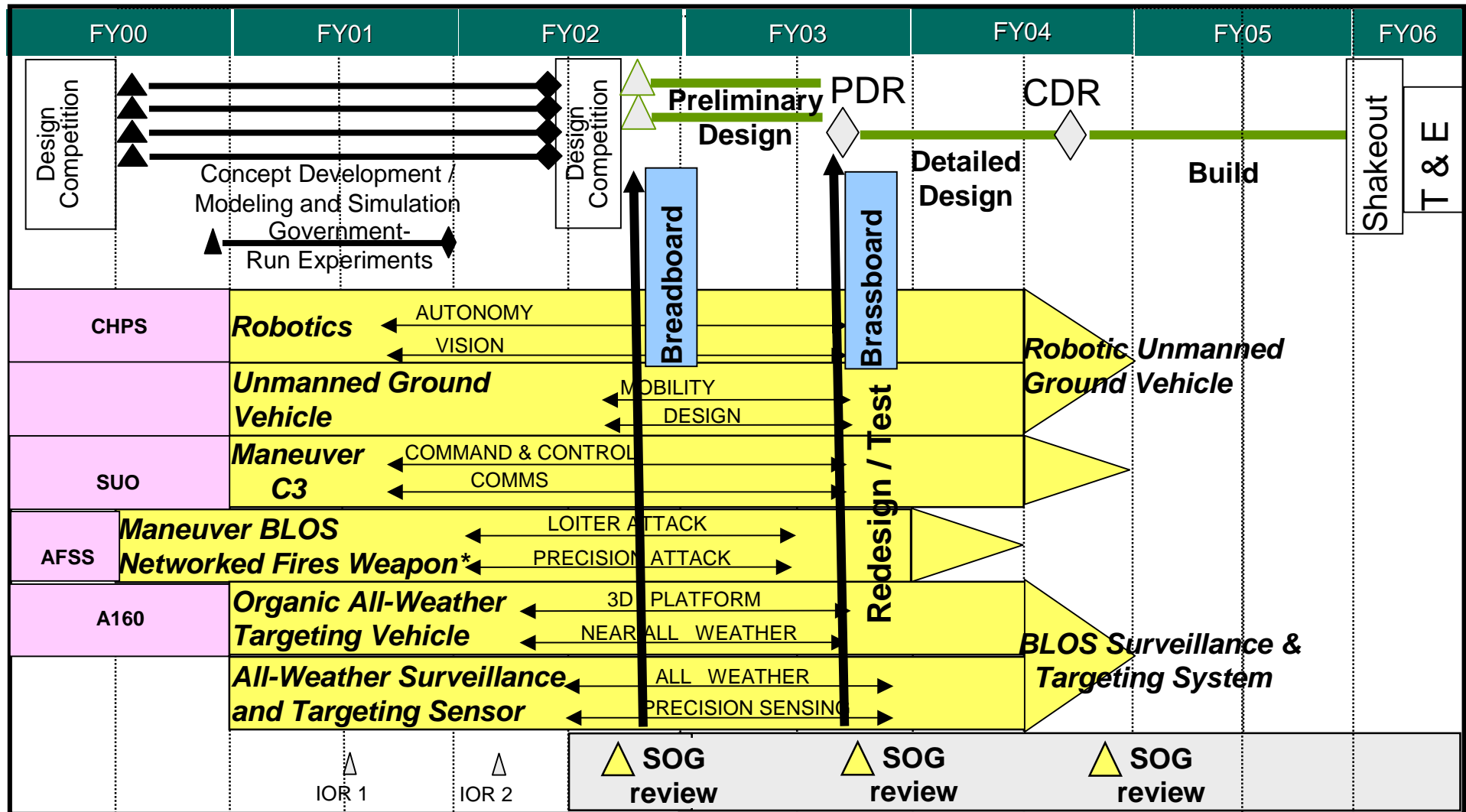


# FCS Way Ahead -- "System" FUE FY12





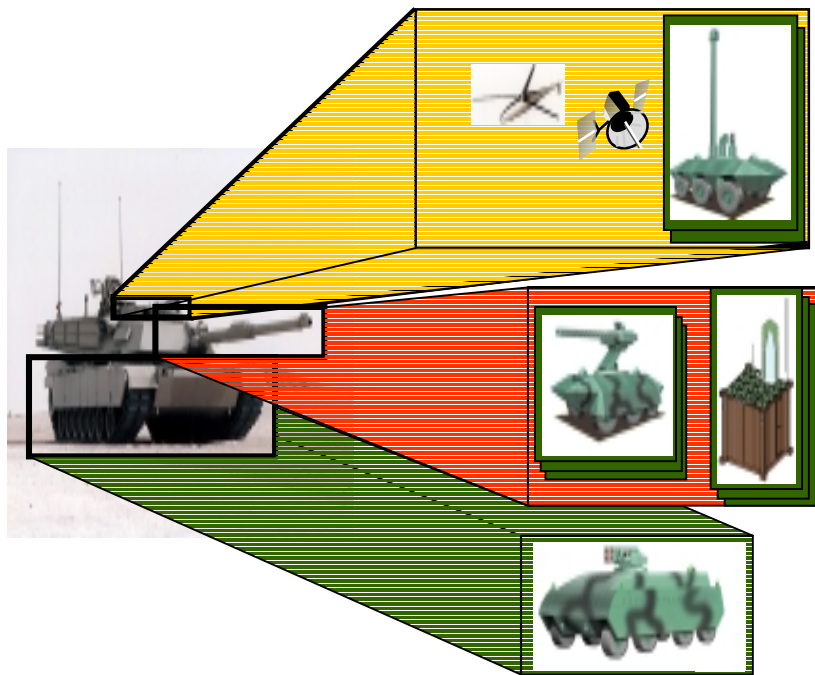
# Total Collaborative Effort to Support FCS





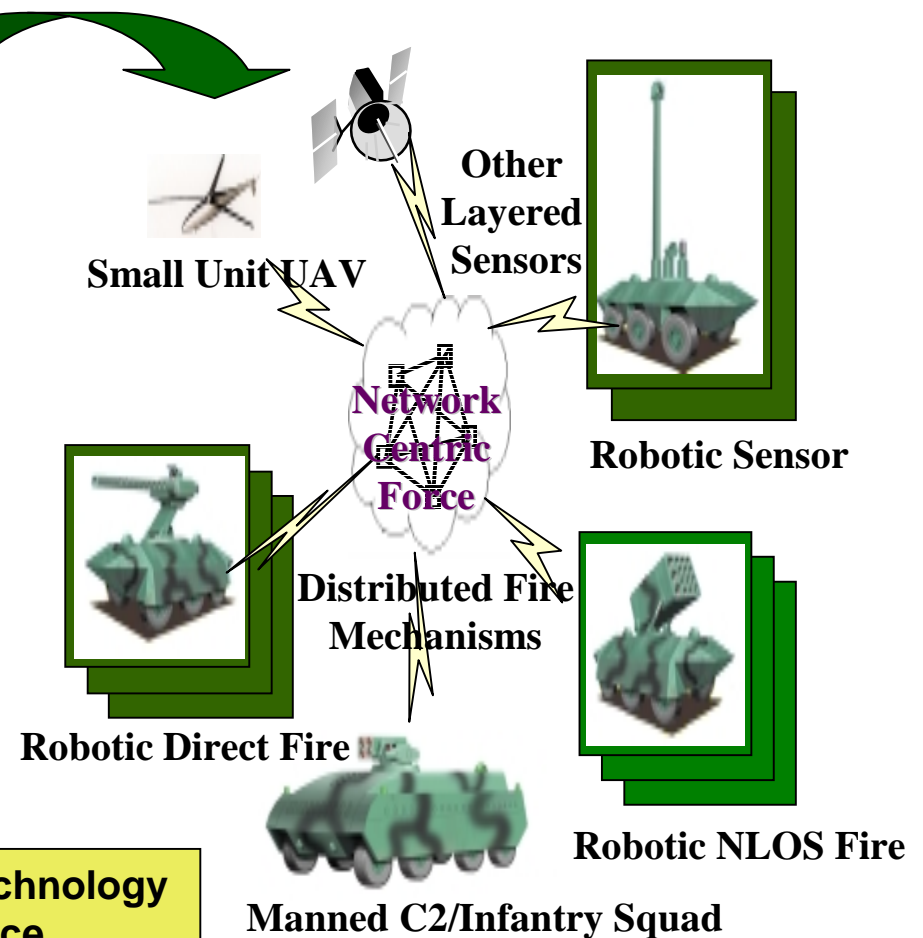
# FCS Baseline System Concept

Future Combat Systems



From This...

Network Centric Distributed Platforms  
To This...



Exploit Battlefield Non-Linearities Using Technology  
to Reduce the Size of Platforms and the Force





# FCS Concept Teams

## (Six Proposals - Four 845 Agreement Awards)



### – The Boeing Team

- The Boeing Company, Seattle, WA
- New Definitions, Inc., Tacoma, WA
- Vector Research, Inc., Ann Arbor, MI
- Whitney, Bradley & Brown, Inc., Vienna, VA
- Signature Research, Inc., Calumet, MI
- National Institute of Standards and Technology (NIST), Gaithersburg, MD
- Rockwell Science Center, Thousand Oaks, CA
- Krauss-Maffei Wegmann (KMW), Germany

### – Team Full Spectrum

- SAIC
- United Defense, LP
- ITT Industries
- Northrop Grumman Corp
- Logistics Management Institute (LMI)
- SRI International
- Strategic Perspectives Inc.
- Omnitech Robotics International LLS
- University of Texas Center for Electromechanics
- VRI

### – Team Gladiator (Consortium)

- TRW
- Lockheed Martin
- CSC/Nichols Research
- Battelle Institute
- Carnegie Mellon
- IITRI/AB Technologies

### – Team FoCuS Vision (Consortium)

- Team FoCuS vision led by General Dynamics Land Systems Inc., Sterling Heights, Michigan and Raytheon Company, Plano, Texas.

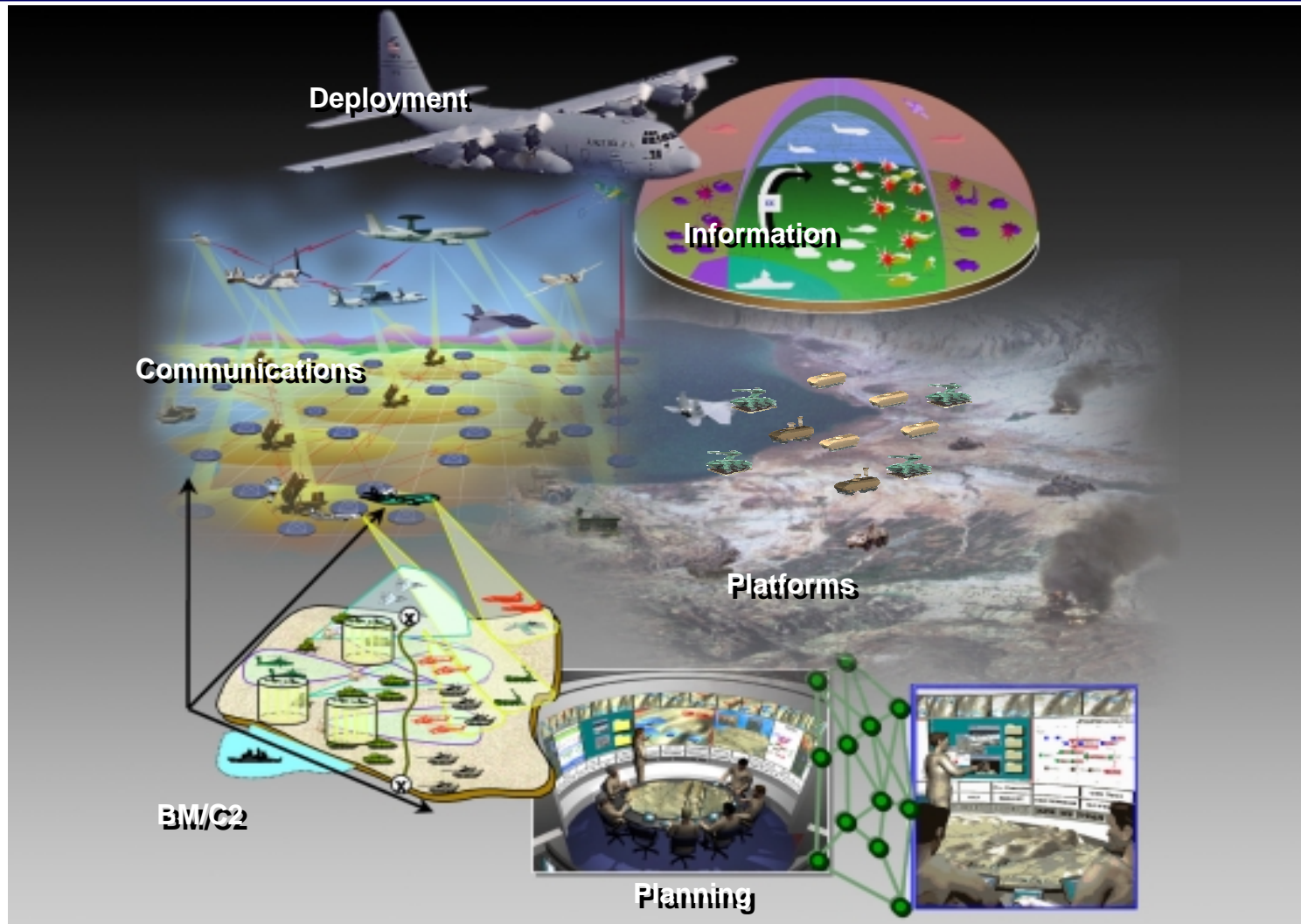
*Other participants with GDLS and Raytheon include:*

- Aurora Flight Sciences
- Carnegie-Mellon University
- Honeywell
- Maxwell Physics International
- Stanford Research Institute International
- Sensis
- Sensor.com Wireless Integrated Network Sensors
- Whitney Bradley & Brown Inc.
- Los Alamos National Laboratory





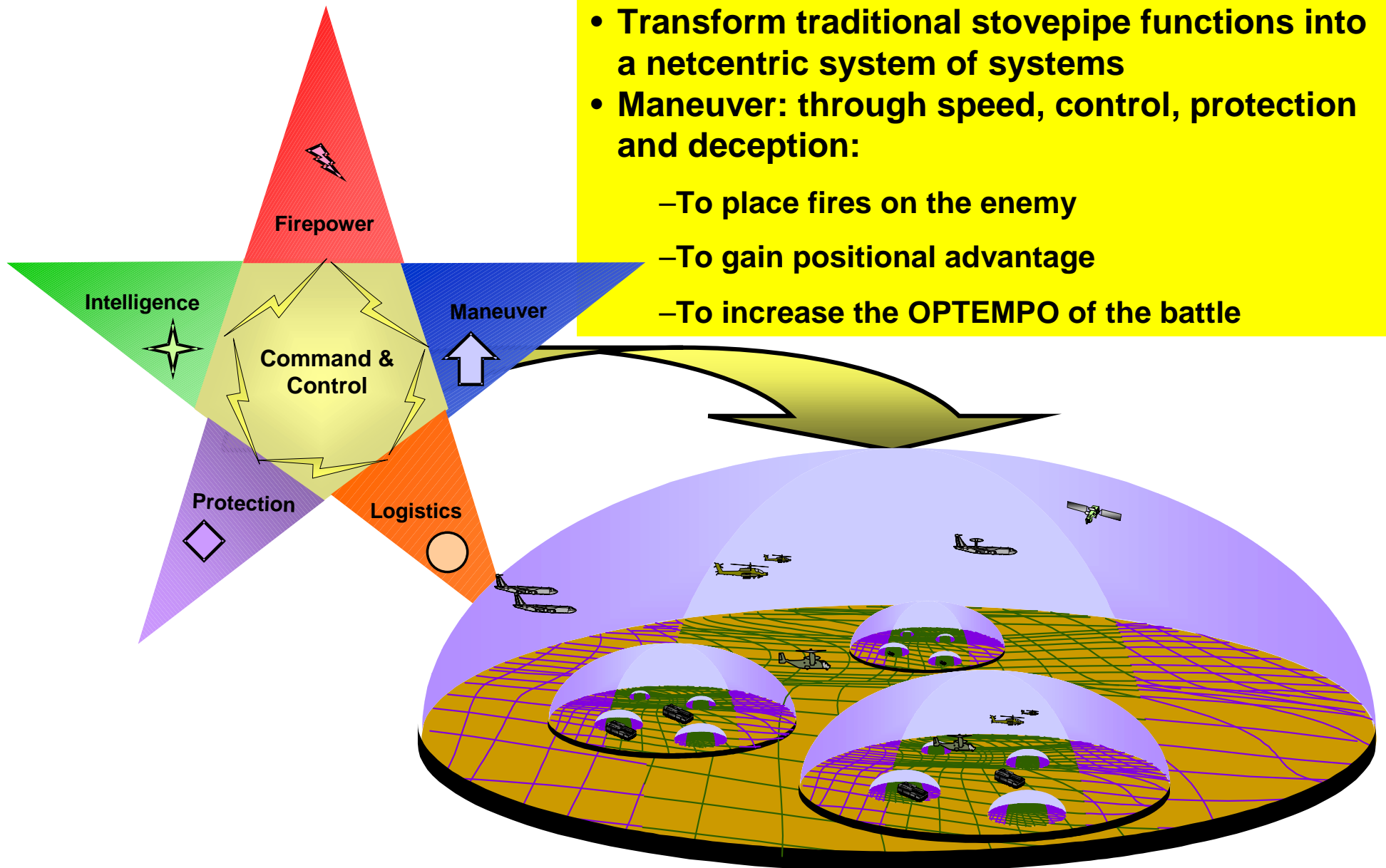
# Concept - *Boeing Team*



**Tailorable multipurpose force comprising an adaptable system of robotic-enhanced platforms brought together by a remoted distributed and non-dedicated architecture.**

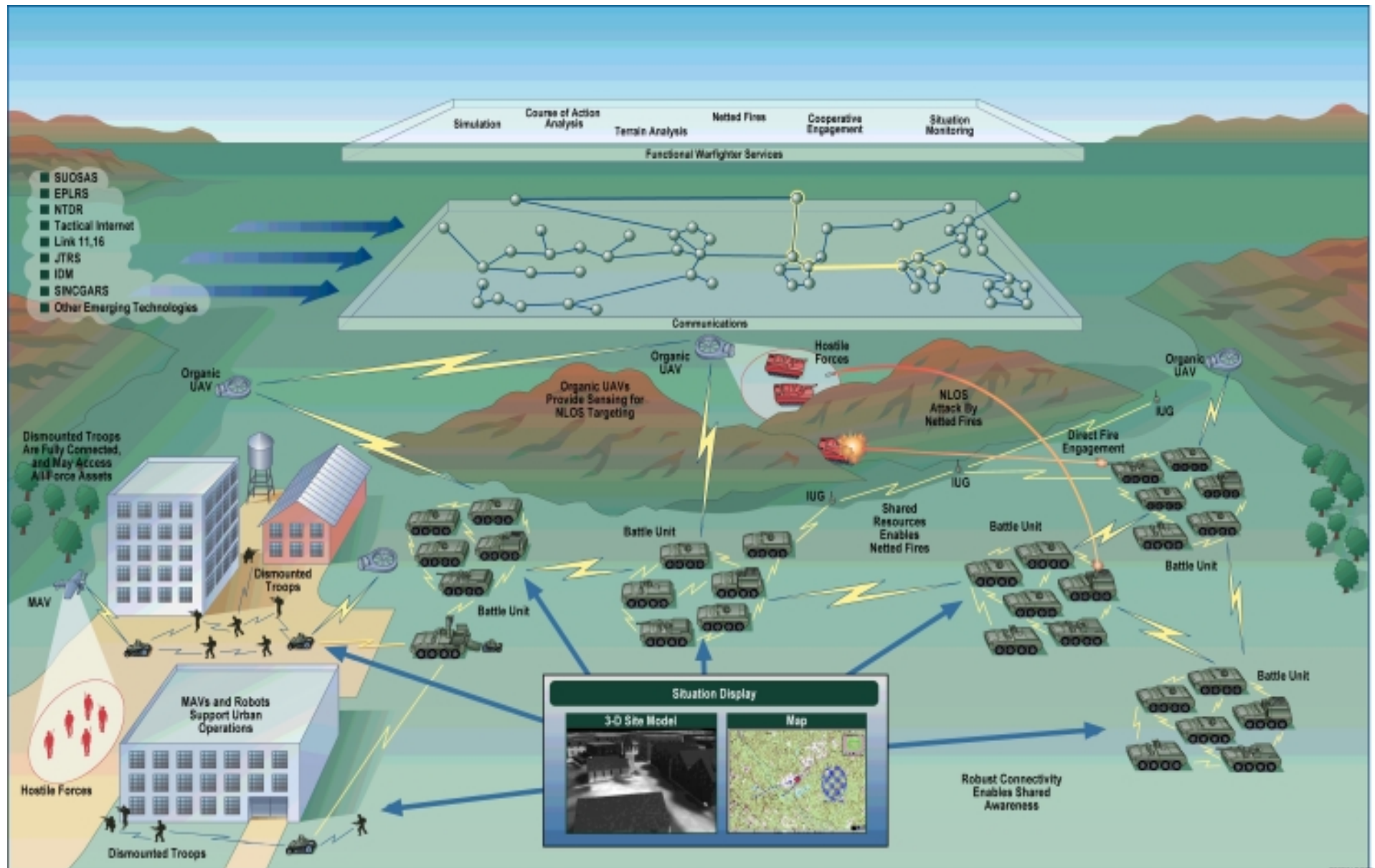
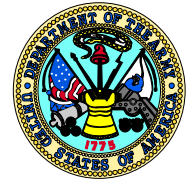


# Concept - *Team FoCus Vision*





# Concept - *Team Full Spectrum*







# Concepts - Team Gladiator



## FCS Smart Sensor Web Provides Selectable Resolution to Support the Commander's Course of Action

- Manned/Unmanned Ground, Air, Space Sensors Provide All Weather Day/Night Battlefield Coverage
- Ultrareliable C4ISR Architecture Provides the Commander's Common Operational Picture
- The Common Operational Picture is Scalable and Tailorable for all Levels of Command and Control

## The FCS Three-Tier Nested Communications Network Ensures High Quality and High Speed Service to the Commanders

- Using a Ground to Ground, Line of Sight Flood Routed System, Augmented by a Secondary Star Topology, Implemented through UAVs and Low Bandwidth, High Availability Direct to Satellite Links Provides on-the-Move Communications to and from Every Platform

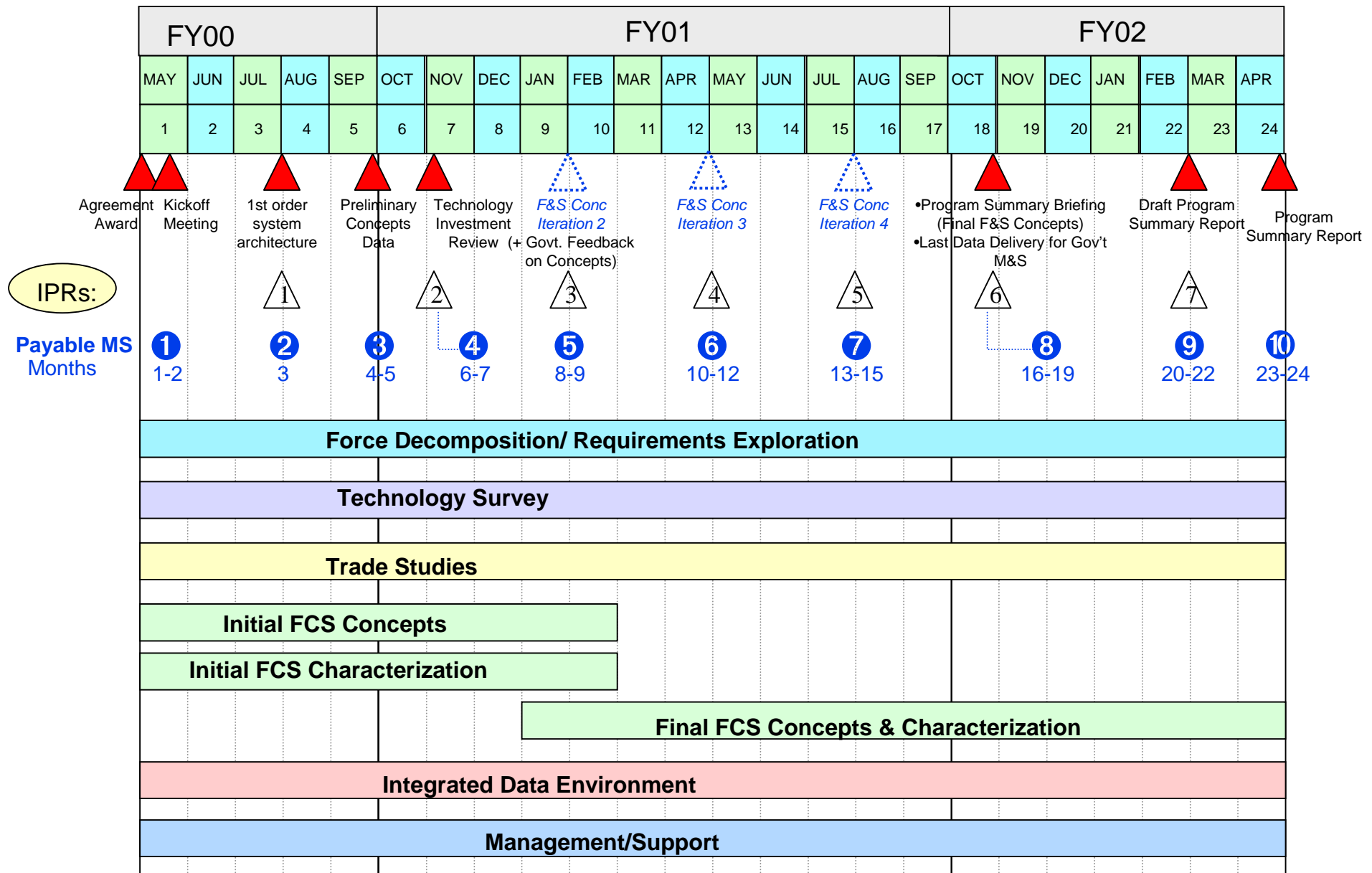
## FCS Robotic and Manned Platforms Engage Decisively at the Time and Place of the Commander's Choosing

### Alternative FCS Capabilities

SPARTACUS				BEN HUR			
UAVs	Flash	Audio	EMP	UAV	Decoy/Non-Lethal	UAV	UAV
Sensor	Obscure	Project	Smell	Hologram	Notional Fighting Entity	Robotic Fighting Vehicles	C2
Fighting Vehicle/C2	Robotic BLOS/ADA	Robotic UAV Tender					



# Milestone/Schedule





# Expectations



- **Diverse Team backgrounds bring different approaches to defining FCS Force solutions.**
- **Team taxonomies provide necessary skill and facility mixes to address the needs of the total program.**
- **Teams, augmented by government expertise and technology, will significantly reduce overall program risk.**
- **We will understand “what makes a difference” based on government and Team modeling and limited and focused government testing.**
- **Capability to “reteam” in the next phase will capture the “best of the best.”**



# Summary



- **MOA is signed.**
- **Concept Team Agreements have been awarded and we are underway.**
- **Program relationships, organizational structure, and significant cost sharing (including Army, DARPA and Industry teams) are in place. PM will transition with program to promote continuity.**
- **Industry and Government teams are *solid* and enthusiasm levels are high.**
- **Program is structured to meet 2012 FUE.**